

## ABSTRACT

An ambulatory mechanical leg system drives a mechanical leg (100, 21) with a crank (91) to pivot about a pivot axis (102) to produce uniform rectilinear motion at the distal end (41) of the leg (100, 21) during a stride stroke (51) portion of a crank revolution or cycle and then lifts the distal end (41) to fast-return it in a step stroke (61) during the remainder of the revolution to a starting point for the next stride stroke (51). The crank (91), leg (100, 21) and pivot axis (102) sizes and proportional lengths or distances are modeled to an angular profile that produces nearly constant velocity, and mechanical structures maintain nearly rectilinear motion, of the distal end (41) of the leg (100, 21) during the stride stroke (51).